5.5 INFRASTRUCTURE

This chapter assesses infrastructure impacts that would result from the provision of additional housing under Mitigation Measure SOCIO-1b.

Overall, the increased housing elements in Bay View and NASA Research Park proposed in Mitigated Alternative 5 of the Final Programmatic EIS would not require the installation of utility infrastructure that would not have been required under the Draft Programmatic EIS. Demands would increase for water, sanitary sewer, electric and gas. However, as discussed below, these increases are either within the range of values that can be accommodated by the conservative parameters used at this very preliminary level of design or, in the case of water, do not form the basis for design of the utility system.

A. Water

The design of water systems is based on fire flow requirements. The increase in potable water demand does not affect the fire flow requirements. Therefore, no changes to the proposed water system would be required. The annual potable water demand would increase as shown in Table 5.5-1.

The total annual potable demand from the revised Alternate 5 represents an increase of 159 mega-liters (42 million gallons) above the existing annual demand. This is roughly 0.12 percent of the total water demand on the SFWD system projected for 2030, which would not constitute a significant impact.

B. Reclaimed Water

Reclaimed water demand is not affected by the increased housing. Therefore, no changes to the proposed reclaimed water system will be required.

TABLE 5.5-1 **INCREASE IN ANNUAL WATER DEMAND**

	Annual Water Demand in Mega-Liters (Annual Demand in Millions of Gallons) Comparison of Alternative 5	
Development Area	**Draft EIS**	**Final EIS**
NRP	291.0 (76.9)	371.7 (98.2)
Bay View	183.9 (48.6)	266.3 (70.4)
Eastside/Airfield	36.5 (9.6)	36.5 (9.6)
Ames Campus	224.7 (59.4)	224.7 (59.4)
Ames Campus Irrigation	153.6 (40.6)	153.6 (40.6)
Total	890 (232)	1,053 (278)

C. Sanitary Sewer

The increase in sewer demand for both the eastern and western sanitary sewer systems are within the range of values that can be accommodated by the assumed design parameters. Therefore, no changes to the proposed sewer systems will be required. The sewer demands will increase as shown in Tables 5.5-2 and 5.5-3.

TABLE 5.5-2 **INCREASE IN EASTERN SANITARY SEWER SYSTEM DEMANDS**

	Peak Wet Weather Flow Comparison of Alternative 5	
	Draft EIS	**Final EIS**
Flow rate for determining impacts to pipe system liters per minute (gpm)	5,057 (1,336)	5,443 (1,438)
Flow rate for determining impacts to treatment plant mega-liters per day (MGD)	3.33 (0.88)	3.56 (0.94)

TABLE 5.5-3 **INCREASE IN WESTERN SANITARY SEWER SYSTEM DEMANDS**

	Peak Wet Weather Flow Comparison of Alternative 5	
	Draft EIS	**Final EIS**
Flow rate for determining impacts to pipe system liters per minute (gpm)	4,460 (1,178)	4,840 (1,278)
Flow rate for determining impacts to treatment plant mega-liters per day (MGD)	3.22 (0.85)	3.41 (0.90)

The increases in demand will not change the mitigation measures required for the proposed development.

TABLE 5.5-4 **INCREASE IN ANNUAL GAS DEMAND**

	Annual Gas Demand in giga-joules (Annual Demand in kilo-therms) Comparison of Alternative 5	
Development Area	**Draft EIS**	**Final EIS**
NRP	268,935 (2,549)	291,619 (2,764)
Bay View	92,107 (873)	121,965 (1,156)
Eastside/Airfield	30,913 (293)	30,913 (293)
Ames Campus	340,257 (3,225)	340,257 (3,225)
Total	732,212 (6,940)	784,754 (7,438)

D. Storm Drainage

Storm water runoff would not be affected by the increased housing. Therefore, no changes to the proposed storm drainage system will be necessitated by the increased housing. Changes to the system are required for other reasons. The revised system is described in the Final EIS in Section 4.5.

E. Electric Service

The increase in electricity demand due to the increased housing is less than 2 percent. Therefore, no changes to the proposed electrical system will be

necessitated by the increased housing. Capacity of the transmission lines supplying Ames Research Center are more than adequate to accommodate this slight increase.

F. Natural Gas Service

The increase in gas demand is within the range of values that can be accommodated by the assumed design parameters. Therefore, no changes to the proposed gas system would be required. The gas demand will increase as shown in Table 5.5-4. Capacity of the main gas lines supplying Ames Research Center are more than adequate to accommodate the increase shown in the table.

Revised demand tables for water, sanitary sewer and gas are provided in Appendix H.